Segundo Parcial 2020

Ejercicio 2

- parte a
- parte b

```
clear all
clc

%%Bases del sistema
Ub1=15; Ub2=Ub1*320/15; Ub3=Ub2*60/320;
Sb=100;
Zb1=Ub1^2/Sb; Zb2=Ub2^2/Sb; Zb3=Ub3^2/Sb;
Ib2=Sb/1.732/Ub2*1000
% impedancias en pu de todos los elementos
xgs=0.02j,
xt1=0.03j*100/50, xt2=xt1, xt3=xt1,
zLs=0.1j/Zb2, zL0=0.2j/Zb2,
z1=72.0j/Zb3, z2=120.0j/Zb3,
% tension previa al defecto en barras B
uB_ad=315/Ub2,
```

```
Ib2 =  180.4273

xgs =         0 + 0.0200i

xt1 =         0 + 0.0600i

xt2 =         0 + 0.0600i

xt3 =         0 + 0.0600i

zLs =         0 +9.7656e-005i

zL0 =         0 +1.9531e-004i

z1 =         0 + 2.0000i

z2 =         0 + 3.3333i

uB_ad =    0.9844
```

parte a

corrientes por las cargas antes del defecto

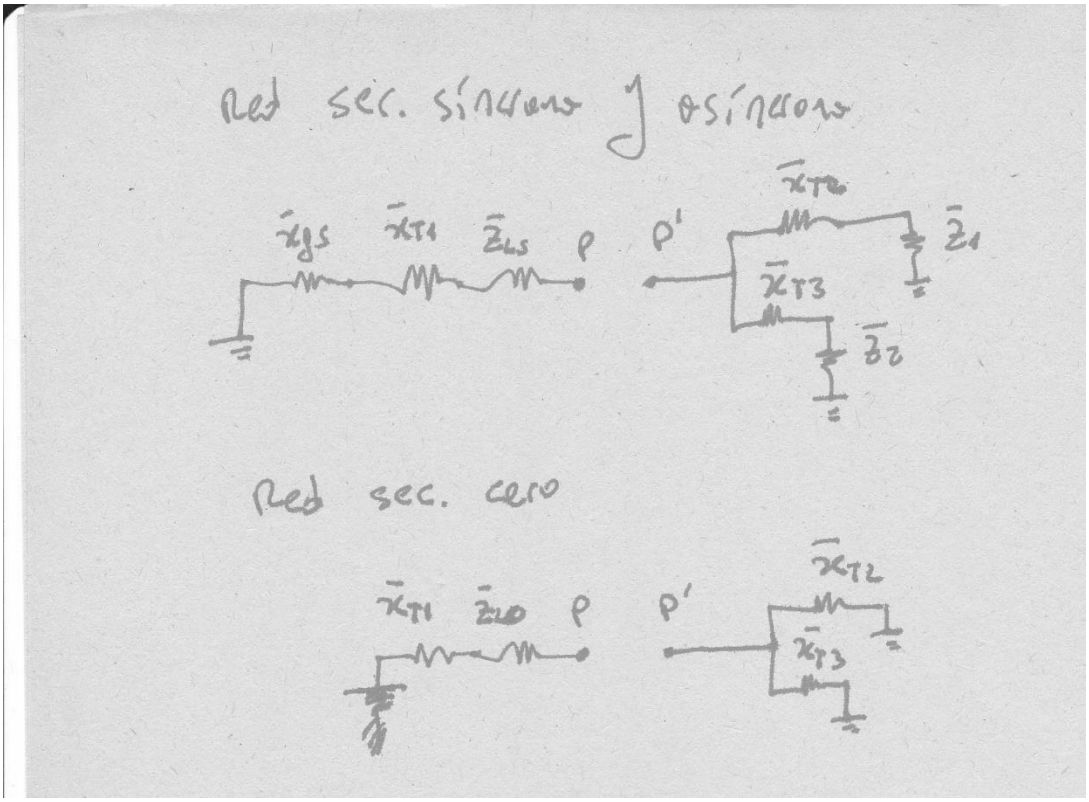
```
i1_ad=uB_ad/(xt2+z1)
i2_ad=uB_ad/(xt3+z2)
% tensiones en bornes de las cargas
u1_ad=uB_ad*z1/(xt2+z1)
u2_ad=uB_ad*z2/(xt3+z2)
% potencias consumidas por la carga en pu
s1_ad=u1_ad*conj(i1_ad)
s2_ad=u1_ad*conj(i2_ad)
% potencias consumidas por la carga en MVA
```

```
S1_ad=s1_ad*Sb
S2_ad=s2_ad*Sb
```

```
i1_ad =         0 - 0.4779i

i2_ad =         0 - 0.2901i

u1_ad =    0.9557

u2_ad =    0.9670

s1_ad =         0 + 0.4567i

s2_ad =         0 + 0.2772i

S1_ad =         0 +45.6685i

S2_ad =         0 +27.7241i
```

parte b

redes de secuencia




```
zpp_s=xgs+xt1+zLs+paralelo(xt2+z1,xt3+z2)
zpp_a=zpp_s
zpp_0=xt1+zL0+paralelo(xt2,xt3)
% factores de distribucion
fs1=paralelo(xt2+z1,xt3+z2)/(xt2+z1)
fa1=-fs1
fs2=1-fs1
fa2=-fs2
```

```
% tension de norton
upp=(i1_ad+i2_ad)*zpp_s
% corrientes durante el defecto
id=(zpp_a+zpp_0)*upp/(zpp_s*zpp_a+zpp_s*zpp_0+zpp_a*zpp_0)
ii=-zpp_0*upp/(zpp_s*zpp_a+zpp_s*zpp_0+zpp_a*zpp_0)
ih=-zpp_a*upp/(zpp_s*zpp_a+zpp_s*zpp_0+zpp_a*zpp_0)
% corrientes por las cargas
id_1=id*fs1, ii_1=ii*fa1, ih_1=0
id_2=id*fs2, ii_2=ii*fa2, ih_2=0
% tensiones en bornes de las cargas
ud_1=id_1*z1, ui_1=ii_1*z1, uh_1=0
ud_2=id_2*z2, ui_2=ii_2*z2, uh_2=0
% potencia consumida por las cargas en pu
s1=ud_1*conj(id_1)+ui_1*conj(ii_1)
s2=ud_2*conj(id_2)+ui_2*conj(ii_2)
% potencia consumida por las cargas en MVA
S1=s1*Sb
S2=s2*Sb
```

```
zpp_s =        0 + 1.3619i

zpp_a =        0 + 1.3619i

zpp_0 =        0 + 0.0902i

fs1 =    0.6222

fa1 =   -0.6222

fs2 =    0.3778

fa2 =   -0.3778

upp =    1.0459

id =        0 - 0.7230i

ii =        0 + 0.0449i

ih =        0 + 0.6781i

id_1 =        0 - 0.4499i

ii_1 =        0 - 0.0279i

ih_1 =     0

id_2 =        0 - 0.2731i

ii_2 =        0 - 0.0170i

ih_2 =     0

ud_1 =    0.8998

ui_1 =    0.0559

uh_1 =     0

ud_2 =    0.9104
```

```
ui_2 =    0.0565

uh_2 =     0

s1 =         0 + 0.4064i

s2 =         0 + 0.2496i

S1 =         0 +40.6395i

S2 =         0 +24.9619i
```

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